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(19)

(54) A RETRACTABLE NET

(71) We, POPEIL BROTHERS, INC, a corporation organised under the laws of the State of Delaware of 2323 West Pershing Road, Chicago, Illinois 60609, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to nets, and more particularly the type having a hoop and a web or netting secured around the hoop; and even more specifically that type in which the hoop may be enlarged or contracted. While the principal utility of the subject retractable net is in connection with fishing, and the landing of fish, it would be appreciated that the same could also be used as a butterfly net, a net for catching rodents, and other live creatures. In addition, if the net is provided with an extendable handle, the closing of the net will permit the picking of fruit from fruit trees.

The prior art abounds with fishing nets, butterfly nets, and the like having a handle, a hoop forming member, and a netting or mesh around the hoop forming member.

Attempts have been made at developing a collapsable net for purposes of portability, such as exemplified in United States Patent 2,814,899.

Such nets, however, do not have the flexibility for closing or opening the hoop whereby the twofold purpose can be achieved of catching or entrapping the contents of the net, and also collapsing the same for purposes of portability and carrying. In addition, even with the collapsable net illustrated in Patent 2,814,899, its handle member constitutes a protrusion which has little or no value in the retracted configuration, and must be stored in a housing of some sort including the net and webbing in the retractable form to otherwise prevent snarling, snagging, and the like.

According to the invention there is provided a net assembly comprising,

a handle,

a receptacle of net material at one end of the handle,

a continuous resilient elongate member reversibly flexed thereby forming a loop,

said elongate member having end portions extending along the handle,

means at the end of the handle adjacent the receptacle to engage the elongate member for forming the loop when the elongate member is passed through said means,

said receptacle being secured to the loop,

and means slidable along said handle and disposed substantially externally thereof for advancing and retracting at least one end of the flexible elongate member, whereby a loop of a desired area of opening may be formed by advancing or retracting said at least one end of the flexible elongate member, as the case may be.

The handle may be hollow for use as a container and may have a removable end cap.

The handle may be marked with a measuring scale for measuring the length of fish or other articles.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of an illustrative retractable net with the hoop portion in the extended or wide open position.

Figure 2 is a perspective view taken from substantially the same vantage point and at the same scale as Figure 1, but showing the hoop in its retracted or "substantially closed" configuration.

Figure 3 is a sequential view taken from the same vantage point and at approximately the same scale as Figure 2 showing how a paddle bag is secured over the end of the retractable net when the same is in the retracted configuration as Figure 2, but with the netting and hoop within the paddle bag.

Figure 4 is an enlarged, broken, exploded, perspective view of the handle and spreader assembly, showing the flexible band in a central

portion of the view.

Figure 5 is a top view, partially in section, of the spreader assembly where the spreader lock is int the locked configuration.

Figure 6 is a view sequential, in the same scale, and same section as Figure 5 showing the spreader lock in the extended or "unlocked" configuration.

Figure 7 is an enlarged broken sectional view taken along section line 7–7 of Figure 2 showing the slidable handle and its means for securing the flexible band.

Figure 8 is an enlarged broken sectional view taken along section line 8–8 of Figure 2 illustrating the band and its relationship to the spreader lock and spreader housing wall.

The subject retractable net 10 is shown in its open configuration in Figure 1 of the drawings. There it will be seen that one end of the retractable net 10 comprises a handle 11, and the opposite end of the handle 11 defines a hoop 12 from which the closed netting 14 depends. The netting 14 is impaled around the periphery of the hoop 12 generally by weaving the same in and out of the holes of the net as generally practised in the art.

A handle slide 15 is shown in Figure 1 substantially adjacent the hoop 12 and netting 14 which, in the extended configuration as shown in Figure 1, maximizes the opening defined by the hoop band 16.

In the configuration shown in Figure 2, the handle slide 15 is in the fully retracted position adjacent the end cap 45 of the handle 11. In this configuration the hoop band 16 defines its smallest opening of the netting 14. The ends of the hoop band 16 in the retracted configuration as shown in Figure 2 are in substantially flanking relationship to the handle 11.

In order to secure the netting 14 from snagging, ripping, tearing, and otherwise render the retractable net 10 compact, a paddle bag 18 is secured over the netting 14 and its related hoop band 16, and then paddle bag snaps 75 are closed over the open end of the paddle bag 18 to define a paddle like member or assembly 76 at the end of the handle 11 remote from the handle slide 15. In this configuration the user can grasp the handle slide 15, the handle 11, and dip the paddle assembly 76 in the water and use the same as an emergency paddle. To further render the retractable net 10 practical, particularly when used by fishermen, a measuring scale 19 is provided on the handle 11 so that the size of various fish caught can be measured to determine the propriety of their retention.

The spreader assembly 20 appears at the junction between the net opening of the hoop 12, and the handle 11. More specifically, the same is shown in exploded form in Figure 4. There it will be seen that a spreader lock 21 comprises the interior portion of the spreader assembly 20, the latter being defined by an upper housing 22 and a lower housing 24. A lock actuator 25 is rotatably mounted against the spreader assembly 20 by means of the actuator stud 34 extending there beneath, and terminating in the axle portion 64. In addition, the lock actuator 25 includes a finger tab 26 which is swivelably and retractably mounted between a pair of recess ribs 29 defining a tab recess 28 therebetween. A lock link 30 having a locking notch 31 and opposed pin bores 42, 44 is pivotally secured at one end to the lock link pin 32 of the spreader lock 21. At the opposite end the lock link pin 38 fits within the pin bore 44 and, upon rotation of the lock cam 35, advances or retracts the lock link 30 and its associated spreader lock 21. The actuator stud 34 is preferably square in configuration, but other configurations having flat surfaces for coacting with a stud recess 36 within the lock cam 35 will suffice. The recess 39 within the spreader lock 21 (particularly as shown in Figures 5 and 6) permits the lock link 30 to move in and out of coacting relationship between the locking notch 31 and the actuator stud 34 as shown respectively in Figures 5 and 6.

Further as illustrated in Figure 4, the spreader assembly 20 is secured to the handle 11 by means of opposed handle tangs 40, 41 respectively as extensions of the upper housing 22 and lower housing 24 of the spreader assembly 20. The actual securement is accomplished by means of a handle detent 65 in the upper handle tang 40, and staked in place by means of stake 66 in the handle 11 to the handle detent 65.

At the far end of the handle 11 an end cap 45 is provided, the same having a hanging hole 46 at its end, and a mounting stud 48 at the opposite end terminating in a mounting stud collar 49 having an exterior collar configuration conforming to the interior cross section of the handle 11. Optionally the subject end cap may be removed, and fishing paraphernalia such as small rods, gaff hooks, or stringers may be inserted interiorly of the body of the handle 11.

Lock notch assemblies 50 are provided at the ends of the flexible band 16. The assembly 50 comprises opposed inner notches 51 and opposed outer notches 52 at opposed stations on the two ends of the flexible band 16. The ends of the flexible band 16 and more particularly the lock notch assembly 50 are secured interiorly of the handle slide 15 since the latter comprises an upper half 55 and a lower half 56, each having upper band slots 58, lower band slots 59, and a plurality of band lock knobs 60 interiorly of the slots 58, 59 to nestingly engage the opposed notches 51, 52 of the lock notch assemblies on the ends of the flexible band 16 (as shown in Figure 7).

The upper housing 22 and lower housing 24 of the spreader assembly 20, as shown in Figure 8, have respectively a tongue 68 and groove 69 on their opposed faces thereby completing the assembly of the spreader assembly 20.

Referring now again to Figure 4, it will be

seen that the spreader lock 21 has hoop forming ends at its outer portion, followed by locking walls 72 which have a configuration substantially the same as the inner shaping walls 71 of the upper housing 22 and lower housing 24 of the spreader assembly 20.

As a consequence of the configuration of the locking wall 72 and the shaping wall 71, the flexible band 16 as shown in Figures 5 and 6, is secured between those walls and its flexing holds the locking link 30 and its associated elements in position as shown in Figure 5. To unlock, the finger tab 26 (see Figure 4) is lifted, and the lock actuator 25 rotated. As the lock actuator 25 rotates, the actuator stud 34 extending downwardly through the lock cam 35 rotates the latter, thereby urging lock link pin 38 to retract or advance the lock link from the positions shown at opposite extremes in Figures 5 and 6. Once the actuator axle 64 of the lock stud 62 is totally rotated, the lock actuator stud 34 is positioned within the lock notch 31. Further to be noted is how the recess 39 accommodates the lateral movement of the lock link 30. While an actuator journal 62 has been shown in the lower housing 24, it will be appreciated that a collar may be substituted for the actuator axle 64 at the lower portion of the actuator stud 34, and that the actuator stud bore 61 in the upper housing 22 may receive a circular portion of the actuator stud 34, or alternatively the actuator stud 34 may be provided with its own collar.

The opposed portions of the slides 55, 56 may be snap-fittingly engaged each to the other and are removable by means of bolts or threaded members. The purpose of the removable relationship, particularly as shown in Figure 4, is so that the flexible band 16 may be withdrawn through the spreader assembly 20, and thereafter the net 14 replaced. To this end, it will be noted that the spreader lock 21 is provided with net pins 80 which are removably positioned within net recesses 81 in the ends of the spreader lock 21, by means of net pin holes 82. Safety pins may be substituted for the net pins 80 as shown. In this fashion, the net portion which is closely adjacent the spreader assembly 20, is secured for movement in and out slightly as the lock actuator 25 is activated.

In view of the foregoing, it will be observed that a retractable net 10 has been disclosed and described having a substantially infinite number of net hoop openings between a position where the handle slide 15 is extended close to the hoop 12, and remote from the hoop 12 as shown respectively in Figures 1 and 2. In the remote configuration as shown in Figure 2 which is also acceptable for storage, the net 14 is secured generally interiorly of the hoop band 16, and thereafter a paddle bag 18 is secured thereabout by means of paddle bag snap 75 rendering the thus retracted and stored configured retractable net 10 available as an emergency paddle.

Exemplary of the dimensional advantages achieved through the retractable hoop, are the dimensions of a commercial embodiment. When the net is extended, the hoop takes a semi-ellipsoidal configuration in which long axis is 21 inches, and the minor axis is 18 inches, rendering, along with a handle, length of 26 inches, a total length of 47 inches to the net in its maximum open configuration. When the band and hoop are retracted, however, the handle length remains 26 inches, but the total length is reduced to 32 inches from 47 inches, and the hoop assumes a substantially circular configuration of only 6 inches by 6 inches, or a reduction in diameter of at least one-third. Nonetheless, the 6 inch by 6 inch circular configuration of the retracted hoop is stronger since the unsupported length is reduced, and therefore, when serving as a paddle can resist normal paddling pressures.

WHAT WE CLAIM IS:—

1. A net assembly comprising,

a handle,

a receptacle of net material at one end of the handle,

a continuous resilient elongate member reversibly flexed thereby forming a loop,

said elongate member having end portions extending along the handle,

means at the end of the handle adjacent the receptacle to engage the elongate member for forming the loop when the elongate member is passed through said means,

said receptacle being secured to the loop,

and means slidable along the handle and disposed substantially externally thereof for advancing and retracting at least one end of the flexible elongate member, whereby a loop of a desired area of opening may be formed by advancing or retracting said at least one end of the flexible elongate member, as the case may be.

2. A net assembly as claimed in claim 1, comprising means for locking said elongate member at selected positions as said at least one end of the elongate member is advanced or retracted.

3. A net assembly as claimed in claim 1 or claim 2, wherein said means for advancing and retracting at least one end of the flexible elongate member comprises a hollow member arranged to slide along the handle.

4. A net assembly as claimed in claim 3, said hollow member comprising two separable halves, said end portions being locked in place when the halves are secured together, there being means for securing said halves together, whereby the elongate member may be released to replace the receptacle.

5. A net assembly as claimed in any preceding claim, wherein said advancing and retracting means is arranged to advance and retract both ends of the elongate member while the ends are substantially opposite each other, whereby the loop may be opened and closed in a substantially symmetrical configuration about the

longitudinal axis of the handle.

6. A net assembly as claimed in any preceding claim, said means for shaping having spreader means having a "Y" shaped inner wall engaging the outer surfaces of the elongate member, and diverting means interior of the spreader means and elongate member having surfaces engaging the inner surfaces of said elongate member and diverting the opposed portions of the elongate member outwardly as said at least one end of the elongate member is advanced.

7. A net assembly as claimed in claim 6, said spreader means comprising a spreader housing having an upper portion and a lower portion, said "Y" shaped inner wall defining outwardly diverging shaping walls in opposed relationship against which the elongate member may fit, the diverting means comprising a spreader lock adapted to fit within the spreader housing, said spreader lock having locking walls complementary to the shaping walls of the housing for receiving the elongate member therebetween and terminating in hoop forming ends, and means for moving the spreader lock in and out of face to face relationship with the elongate member.

8. A net assembly as claimed in claim 7, said means for moving the spreader lock comprising a link and a crank in toggle relationship, whereby when the lock is engaged its locking walls oppose the shaping walls of the housing and the flexing of the elongate member urges the same in continuing locked relationship.

9. A net assembly as claimed in any preceding claim, wherein the elongate member is of rectangular cross section.

10. A net assembly as claimed in any preceding claim, wherein the receptacle is removably secured to the loop by means of loops formed in the net material of the receptacle.

11. A net assembly as claimed in any preceding claim, wherein the handle is hollow for use as a container and has a removable end cap.

12. A net assembly as claimed in any preceding claim, wherein the handle is marked with a measuring scale for measuring the length of fish or other articles.

13. A net assembly as claimed in any preceding claim, in combination with a paddle bag adapted to contain the loop of the elongate member and the receptacle, when the resilient member is fully retracted, whereby the paddle bag containing the receptacle may serve, with the handle, as a paddle.

14. A retractable net arranged, constructed and adapted to operate substantially as hereinbefore described with reference to the accompanying drawing.

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1533695 COMPLETE SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1

FIG. 1

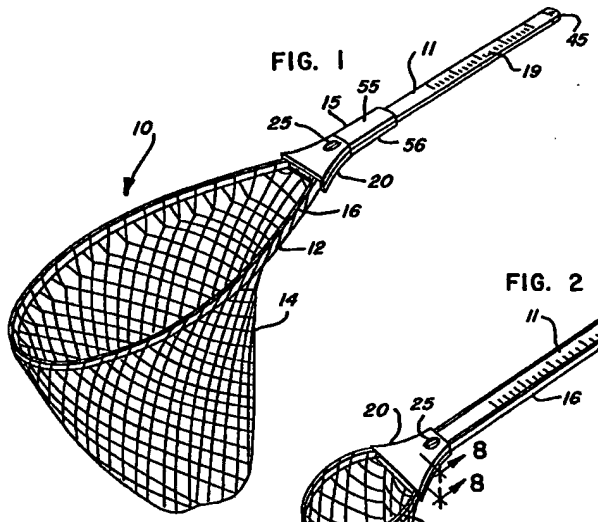


FIG. 2

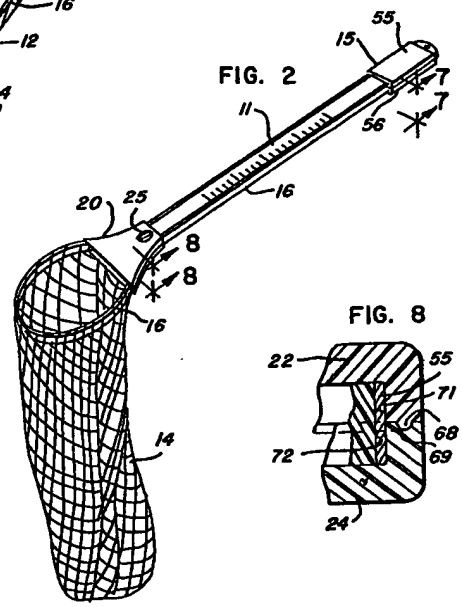


FIG. 8

FIG. 7

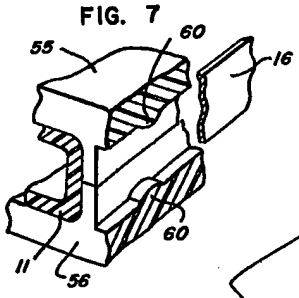
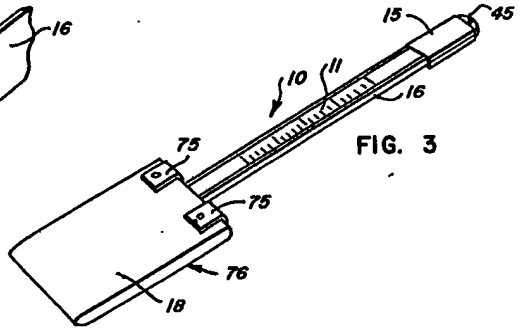


FIG. 3



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Sheet 2

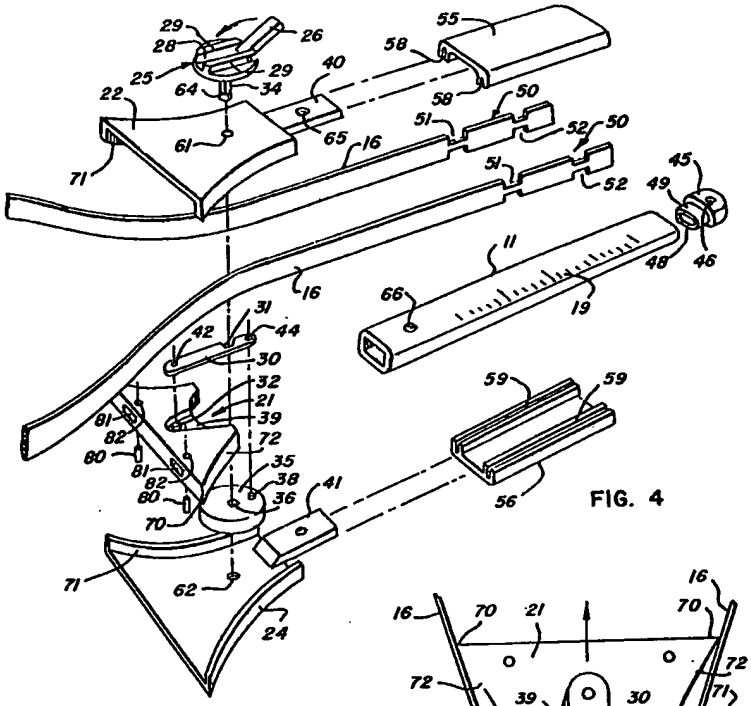

FIG. 4

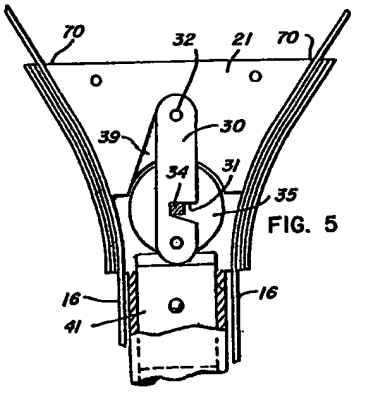

FIG. 5

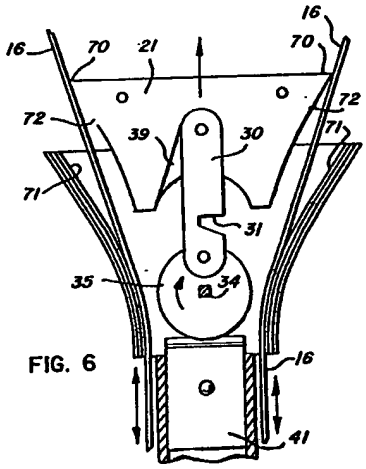

FIG. 6